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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/647,144	08/25/2003	Kyung-hoon Lee	1293.1915	1043

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EXAMINER	
SHOSHO, CALLIE E	
ART UNIT	**PAPER NUMBER**
1714	

DATE MAILED: 12/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/647,144	LEE ET AL.	
	Examiner	Art Unit	
	Callie E. Shosho	1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-21 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-21 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 6 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 6 recites that the aqueous medium is "one of water alone and water in combination with at least one organic solvent". The scope of the claim is confusing in light of the word "and" given that it is not clear how the aqueous medium can be one of water and water/solvent. It is suggested that in the above phrase "and" is changed to "or".

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

5. Claims 1, 3, 6-8, 10, and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taguchi et al. (U.S. 2004/0011248) in view of Fassler et al. (U.S. 6,059,869).

Taguchi et al. disclose ink comprising aqueous medium, organic solvent, colorant, wetting agent, stabilizer, surfactant, viscosity modifier, and up to 5% silanol-modified polyvinyl alcohol. The organic solvent includes alcohols such as methanol, polyhydric alcohol such as ethylene glycol, glycol derivatives such as glycol ether, 2-pyrrolidone, acetone, and dimethyl sulfoxide (paragraphs 1, 3, 27, 29, 55, 72, 75, 78, 103, 121, 124, 132, and 135).

The difference between Taguchi et al. and the present claimed invention is the requirement in the claims of specific polymer.

Taguchi et al. disclose the use of silanol-modified polyvinyl alcohol, however, there is no disclosure of polyvinyl alcohol comprising or modified with silane derivative as required in the present claims.

Fassler et al., which is drawn to ink composition, disclose the use of hydroxy silane that is the reaction product of 3-aminopropyltriethoxysilane and anhydride such as phthalic anhydride. It is noted that the reaction product is identical to that utilized in the present invention and would result in silane derivative identical to that of presently claimed formula (2) when R_2 is aryl group, R_3 is C_3 alkylene group, R_4 and R_5 are each C_2 alkyl group, and R_6 is C_2 alkoxy group. The motivation for using such hydroxy silane as the modifier for polyvinyl alcohol is that it functions as biocide, humectant, and surfactant (col.3, lines 20-31). Given that Taguchi et al. in combination with Fassler et al. disclose silane modified polyvinyl alcohol as presently claimed including silane identical to that presently claimed and given that Fassler et al. disclose that one of the functions of such silane is as a biocide, it is clear that the polymer would intrinsically possess formula as required in presently claimed (1) and would intrinsically be water-soluble and anti-microbial as presently claimed.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to modify the polyvinyl alcohol of Taguchi et al. with the hydroxy silane of Fassler et al. in order to produce polymer which functions as biocide, humectant, and surfactant and thus, produces ink with anti-microbial properties and desired surface tension that would not clog the printer nozzles, and thereby arrive at the claimed invention.

6. Claims 9 and 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taguchi et al. in view of Fassler et al. as applied to claims 1, 3, 6-8, 10, and 12 above, and further in view of Ma et al. (U.S. 5,085,698).

The difference between Taguchi et al. in view of Fassler et al. is the requirement in the claims of specific organic solvent.

It is noted that as written, present claim 9 requires organic solvent that comprises non-polyhydric alcohol, ketone, ester, polyhydric alcohol, lower alkyl ether, nitrogen-containing compound, and sulfur-containing compound.

Taguchi et al. is silent with respect to organic solvent that is an ester.

Ma et al., which is drawn to ink, disclose the use of organic solvent such as ethyl acetate and ethyl lactate. It is further disclosed that such solvent is used in combination with other solvents including alcohol, glycol, polyhydric alcohol, glycol ethers, etc., as disclosed by Taguchi et al., in order to produce ink with desired surface tension, viscosity, and drying time (col.8, line 51-col.9, line 13).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use ester as organic solvent in the ink jet ink of Taguchi et al. in order to produce ink with desired surface tension, viscosity, and drying time, and thereby arrive at the claimed invention.

7. Claims 1-8 and 10-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taguchi et al. (U.S. 2004/0011248) in view of Morehouse (U.S. 2,928,858).

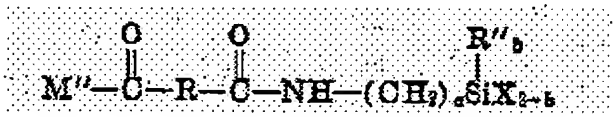
Taguchi et al. disclose ink comprising aqueous medium, organic solvent, colorant, wetting agent, stabilizer, surfactant, viscosity modifier, and up to 5% silanol-modified polyvinyl

alcohol. The organic solvent includes alcohols such as methanol, polyhydric alcohol such as ethylene glycol, glycol derivatives such as glycol ether, 2-pyrrolidone, acetone, and dimethyl sulfoxide (paragraphs 1, 3, 27, 29, 55, 72, 75, 78, 103, 121, 124, 132, and 135).

The difference between Taguchi et al. and the present claimed invention is the requirement in the claims of specific polymer.

Taguchi et al. disclose the use of silanol-modified polyvinyl alcohol, however, there is no disclosure of polyvinyl alcohol comprising or modified with silane derivative as required in the present claims.

Morehouse disclose the use of organosilane of the formula:



which is identical to the silane derivative presently claimed when b is 0, a is at least 3, R is alkylene or arylene, M" is hydroxy group, and X is alkoxy group such as methoxy, ethoxy, and propoxy. It is disclosed that the compound is produced by reacting dicarboxylic acid or anhydride such as adipic acid or phthalic anhydride with aminoalkylalkoxysilane which is identical to the reaction utilized in the present invention. The motivation for using such compound is a lubricant (col.1, lines 15-16 and 49-55, col.2, lines 35-55, col.4, line 62-col.5, line 35, col.6, lines 20-43, col.9, lines 42-56, and col.11, lines 4-5). Given that Taguchi et al. in combination with Morehouse disclose silane modified polyvinyl alcohol as presently claimed including silane identical to that presently claimed, it is clear that the polymer would intrinsically

possess formula as required in present formula (1) and would intrinsically be water-soluble and anti-microbial as presently claimed.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to modify the polyvinyl alcohol of Taguchi et al. with the organosilicone compound of Morehouse in order to produce polymer that produces lubricating properties and thus, produces ink that would not clog the printer nozzles, and thereby arrive at the claimed invention.

8. Claims 9 and 15-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taguchi et al. in view of Morehouse as applied to claims 1-8 and 10-14 above, and further in view of Ma et al. (U.S. 5,085,698).

The difference between Taguchi et al. in view of Morehouse is the requirement in the claims of specific organic solvent.

It is noted that as written, present claim 9 requires organic solvent that comprises non-polyhydric alcohol, ketone, ester, polyhydric alcohol, lower alkyl ether, nitrogen-containing compound, and sulfur-containing compound.

Taguchi et al. is silent with respect to organic solvent that is an ester.

Ma et al., which is drawn to ink, disclose the use of organic solvent such as ethyl acetate and ethyl lactate in order to produce ink with desired surface tension, viscosity, and drying time. It is further disclosed that such solvent is used in combination with other solvents including alcohol, glycol, polyhydric alcohol, glycol ethers, etc. as disclosed by Taguchi et al., in order to produce ink with desired surface tension, viscosity, and drying time (col.8, line 51-col.9, line 13).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use ester as organic solvent in the ink jet ink of Taguchi et al. in order to produce ink with desired surface tension, viscosity, and drying time, and thereby arrive at the claimed invention.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
12/7/05